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2280 HV RIJSWIJK
NETHERLANDS
Tel.: +31 70 340 2040
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Balsters, Robert
Novagraaf International S.A.
25, avenue du Pailly
1220 Les Avanchets - Geneva
SUISSE

EPO Customer Services
Tel.: +31 (0)70 340 45 00

Date
25.04.07

Reference	Application No./Patent No.
BB 57387	05737259.1 - 1241 PCT/JP2005007891
Applicant/Proprietor: Matsushita Electric Industrial Co., Ltd.	

Notification of European publication number and information on the application of Article 67(3) EPC

You are hereby informed that the technical preparations for the publication of the translation of the above-mentioned international application as supplied to the EPO pursuant to Article 158(2) EPC have been completed.

The translation will be published on 23.05.07.
The publication number is: 1788800.
The publication in accordance with Article 158(3) EPC will be mentioned in European Patent Bulletin number 2007/21.(http://www.european-patent-office.org/e_pub/bulletin/index.htm).

The title of the invention in the three official languages of the European Patent Office is worded as follows:

KAMERAINSTALLATIONSEINRICHTUNG
CAMERA INSTALLATION DEVICE
DISPOSITIF D'INSTALLATION DE CAMÉRA

The provisional protection under Article 67(1) and (2) EPC in the individual contracting states becomes effective only when the conditions referred to in Article 67(3) EPC have been fulfilled. For further information, also with respect to extension states, please refer to the EPO brochure "National Law relating to the EPC" (http://www.european-patent-office/legal/national/index.htm).

In all future communications to the EPO, please quote the application number as indicated above, i.e. including the final four figures (which identify the Directorate responsible for the subsequent procedure).

REMARK:
For European patent applications with a date of publication after 01.04.05, no paper copies will be forwarded to the applicant any longer. The publication can be downloaded, free of charge, from the EPO publication server https://publications.european-patent-office.org or can be ordered from the Vienna sub-office upon payment of a fee (see Decision of the President of the EPO dated 22 December 2004, OJ 2005, 124 and Notice from the EPO dated 22 December 2004 concerning the introduction of electronic publication of European patent applications (A-documents) and European patent specifications (B-documents) as well as changes to Rules 51(4), 54 and 108 EPC, OJ EPO 2005, 126).

Receiving Section

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Balsters, Robert
Novagraaf International S.A.
25, avenue du Pailly
1220 Les Avanchets - Geneva
SUISSE

EPO Customer Services
Tel.: +31 (0)70 340 45 00

Date 05-04-2007

Reference	Application No./Patent No.
BB 57387	05737259.1 - 1241 PCT/JP2005007891

Applicant/Proprietor
Matsushita Electric Industrial Co., Ltd.

Communication pursuant to Rules 109 and 110 EPC

(1) Amendment of application documents, especially the claims (R. 109 EPC)

The above mentioned international (Euro-PCT) application has entered the European phase, or can do so, once the necessary conditions are fulfilled.

Under Articles 28, 41 PCT, Rules 52, 78 PCT and Rule 86(2) to (4) EPC, the applicant may amend the application documents after receiving the international search report.

Whether or not he has already done so, he now has a further opportunity to file amended claims or other application documents within a non-extendable time limit of one month after notification of the present communication (R. 109 EPC).

The claims applicable on expiry of the above time limit, i.e. those filed on entry into the European phase or in response to the present communication, will form the basis for the calculation of any claims fee to be paid (see page 2) and for any supplementary search to be carried out under Article 157(2) EPC (R. 109 EPC).

-2/

Registered letter
EPO Form 1226 01.02 EUCL

(2) Claims fees under Rule 110 EPC

If the application documents on which the European grant procedure is to be based comprise more than ten claims, a claims fee shall be payable for the eleventh and each subsequent claim within the period provided for in Rule 107(1) EPC.

☑ Based on the application documents currently on file, all necessary claims fees have already been paid (or the documents do not comprise more than 10 claims).

☐ All necessary fees will be/have been debited automatically according to the automatic debit order.

☐ The claims fee due for the claims ..... to ..... were not paid within the above-mentioned period.

Any non-paid claims fee, either based on the current set of claims or on any amended claims to be filed pursuant to Rule 109 EPC (see page 1), may still be validly paid within a non-extendable period of grace of **one month** after notification of this communication.

If a payment is made for only some of the claims, it must be indicated for which claims it is intended. If a claims fee is not paid in due time, the claim concerned is deemed to be abandoned (R. 110(4) EPC).

If claims fees have already been paid, but on expiry of the above-mentioned time limit there is a new set of claims containing fewer fee-incurring claims than previously, the claims fees in excess of those due under Rule 110(2), 2nd sentence, EPC will be refunded (R. 110(3) EPC).

You are reminded that any supplementary search under Article 157(2) EPC will relate only to the last set of claims applicable on expiry of the above time limit AND will be confined to those fee-incurring claims for which fees have been paid in due time.

The fee for the eleventh and each subsequent claim is EUR 45,00.

Receiving Section

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2280 HV Rijswijk (ZH)
(070) 3 40 20 40
FAX (070) 3 40 30 16

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Generaldirektion 1 | Directorate General 1 | Direction générale 1

OHNO, Seiji
OHNO & PARTNERS
Kasumigaseki Building 36F
2-5, Kasumigaseki 3-chome
Chiyoda-ku, Tokyo 1006036
JAPON

EPO Customer Services
Tel.: +31 (0)70 340 45 00

Date
22.09.06

Reference	Application No./Patent No.
BB 57387	05737259.1 - 2202 PCT/JP2005007891
Applicant/Proprietor: Matsushita Electric Industries Co., Ltd.	

Entry into the European phase before the European Patent Office

These notes describe the procedural steps required for entry into the European phase before the European Patent Office (EPO). You are advised to read them carefully: failure to take the necessary action in time can lead to your application being deemed withdrawn.

1. The above-mentioned international patent application has been given European application No. **05737259.1**.

2. Applicants **without** a residence or their principal place of business in an EPC contracting state may themselves initiate European processing of their international applications, provided they do so before expiry of the 31st month from the priority date (see also point 6 below).

   During the European phase before the EPO as designated or elected Office, however, such applicants must be represented by a professional representative (Arts. 133(2) and 134(1), (7) EPC).

   Procedural acts performed after expiry of the 31st month by a professional representative who acted during the international phase but is not authorised to act before the EPO have no legal effect and therefore lead to loss of rights.

   Please note that a professional representative authorised to act before the EPO and who acted for the applicant during the international phase does not automatically become the representative for the European phase. Applicants are therefore strongly advised to appoint in good time any representative they wish to initiate the European phase for them; otherwise, the EPO has to send all communications direct to the applicant.

3. Applicants **with** a residence or their principal place of business in an EPC contracting state are not obliged to appoint, for the European phase before the EPO as designated or elected Office, a professional representative authorised to act before the EPO.
   However, in view of the complexity of the procedure it is recommended that they do so.

4. Applicants and professional representatives are also strongly advised to initiate the European phase using EPO Form 1200 (available free of charge from the EPO). This however is not compulsory.

5. **To enter the European phase before the EPO**, the following acts must be performed.
(N.B.: Failure validly to do so will entail loss of rights or other adverse legal consequences.)

5.1 If the EPO is acting as **designated** or **elected** Office (Arts. 22(1)(3) and 39(1) PCT respectively), applicants must, within 31 months from the date of filing or (where applicable) the earliest priority date:

a) Supply a translation of the international application into an EPO official language, if the International Bureau did not publish the application in such a language (Art. 22(1) PCT and R. 107(1)(a) EPC).
If the translation is not filed in time, the international application is deemed withdrawn before the EPO (R. 108(1) EPC).
This loss of rights is deemed not to have occurred if the translation is then filed within a two-month grace period as from notification of an EPO communication, provided a surcharge is paid at the same time (R. 108(3) EPC).

b) Pay the national basic fee (EUR 95,00) and, where a supplementary European search report has to be drawn up, the search fee (EUR 720,00 ; R. 107(1)(c) and (e) EPC).

c) If the time limit under Article 79(2) EPC expires before the 31-month time limit, pay the designation fee (EUR 80,00) for each contracting state designated (R. 107(1)(d) EPC).

d) If the time limit under Article 94(2) EPC expires before the 31-month time limit, file the written request for examination **and** pay the examination fee (EUR 1490,00 ; R. 107(1)(f) EPC).

e) Pay the third-year renewal fee (EUR 400,00) if it falls due before expiry of the 31-month time limit (R. 107(1)(g) EPC).

If the fees under (b) to (d) above are not paid in time, or the written request for examination is not filed in time, the international application is deemed withdrawn before the EPO, or the contracting-state designation(s) in question is (are) deemed withdrawn (R. 108(1) and (2) EPC). However, the fees may still be validly paid within a two-month grace period as from notification of an EPO communication, provided the necessary surcharges are paid at the same time (R. 108(3) EPC). For the renewal fee under (e) above, the grace period is **six** months from the fee's due date (Art. 86(2) EPC).

For an overview of search and examination fees, see OJ EPO 11/2005, 577 and 03/2006.

5.2 If the application documents on which the European grant procedure is to be based comprise more then ten claims, a claims fee is payable within the 31-month time limit under Rule 107(1) EPC for the eleventh and each subsequent claim (R. 110(1) EPC). The fee can however still be paid within a one-month grace period as from notification of an EPO communication pointing out the failure to pay (R. 110(2) EPC).

6. If the applicant had a representative during the application's international phase, the present notes will be sent to the representative, asking him to inform the applicant accordingly.

All subsequent communications will be sent to the applicant, or - if the EPO is informed of his appointment in time - to the applicant's European representative.

7. For more details about time limits and procedural acts before the EPO as designated and elected Office, see the EPO brochure

   How to get a European patent
   Guide for applicants - Part 2
   PCT procedure before the EPO - "Euro-PCT"

   This brochure, the list of professional representatives before the EPO, Form 1200 and details of the latest fees are now all available on the Internet under

   http://www.european-patent-office.org

Receiving section

To the European Patent Office

Entry into the European phase (EPO as designated or elected Office)

European application number	
PCT application number	PCT/JP2005/007891
PCT publication number	WO2005109857
Applicant's or representative's reference	BB 57387
1. Applicant	
Particulars of the applicant(s) are contained in the international publication or were recorded by the International Bureau subsequent to the international publication.	☑
Changes which have not yet been recorded by the International Bureau are set out here:	☐
Address for correspondence	
2. Representative 1	
This is the representative who will be listed in the Register of European Patents and to whom notifications will be made	
Name	Balsters, M. Robert
Registration No	083702.1
Address of place of business	Novagraaf International SA 25 avenue du Pailly Les Avanchets Geneva, 1220 Switzerland
Telephone	+41 22 979 0 969
Fax	+41 22 979 0 960
e-mail	mail@novagraaf.ch
Any additional representative(s) is/are listed here:	☑ Kuegele, M. Bernhard Holmes, M. Miles Pautex Schneider, Mme Nicole
3. General Authorisation:	
An individual authorisation is attached.	☐
A general authorisation has been registered under No:	☐
A general authorisation has been filed, but not yet registered.	☐
The authorisation filed with the EPO as PCT receiving Office expressly includes the European phase.	☐
4. Request for examination	
Examination of the application under Art. 94 EPC is hereby requested. The examination fee is being (has been, will be) paid.	☑
Request for examination in an admissible non-EPO language:	☐
5. Copies	
One or more additional sets of copies of the documents cited in the supplementary European search report are hereby requested.	☐
Number of additional sets of copies	
6. Documents intended for proceedings before the EPO	
6.1 Proceedings before the EPO as designated Office (PCT I) are to be based on	

the following documents:	
the application documents published by the International Bureau (with all claims, description and drawings), where applicable with amended claims under Art. 19 PCT	☑
unless replaced by the amendments attached.	☐
Where necessary, clarifications should be attached as `Other Documents`	
6.2 Proceedings before the EPO as elected Office (PCT II) are to be based on the following documents:	
the documents on which the international preliminary examination report is based, including any annexes	☐
unless replaced by the amendments attached.	☐
Where necessary, clarifications should be attached as `Other Documents`	
If the EPO as International Preliminary Examining Authority has been supplied with test reports, these may be used as the basis of proceedings before the EPO.	☐
7. Translations	
Translations in one of the official languages of the EPO (English, French, German) are attached as crossed below:	☐
* In proceedings before the EPO as designated or elected Office (PCT I + II):	
Translation of the international application (description, claims, any text in the drawings) as originally filed, of the abstract as published and of any indication under Rule 13bis.3 and 13bis.4 PCT regarding biological material	☑
Translation of the priority application(s)	☐
It is hereby declared that the international application as originally filed is a complete translation of the previous application (Rule 38(5) EPC)	☐
* In addition, in proceedings before the EPO as designated Office (PCT I):	
Translation of amended claims and any statement under Art. 19 PCT, if the claims as amended are to form the basis for the proceedings before the EPO (see Section 6).	☐
* In addition, in proceedings before the EPO as elected office (PCT II):	
Translation of annexes to the international preliminary examination report	☐
8. Biological material	
The invention relates to and/or uses biological material deposited under Rule 28 EPC.	☐
The particulars referred to in Rule 28(1)(c) EPC (if not yet known, the depository institution and the identification reference(s)) [number, symbols, etc.] of the depositor) are given in the international publication or in the translation submitted under Section 7 on:	☐
page(s) / line(s)	
A copy of the receipt(s) of deposit issued by the depositary institution	
is attached	☐
will be filed at a later date	☐
A waiver of the right to an undertaking from the requester pursuant to Rule 28(3) EPC is attached.	☐
9. Nucleotide and amino acid sequences	
The items required under Rules 5.2 and 13ter PCT and Rule 111(3) EPC have already been furnished to the EPO.	☐
The sequence listing as part of the description is attached in PDF format.	☐
The sequence listing does not include matter that goes beyond the content of the application as filed.	☐
In addition, the sequence listing data is attached in computer-readable form in accordance with WIPO Standard 25.	☐
The sequence listing data in computer-readable form in accordance with WIPO Standard 25 is identical to the sequence listing in PDF format.	☐
10. Designation fees	
10.1 It is currently intended to pay seven times the amount of the designation	☑

fee. The designation fees for all the EPC contracting states designated in the international application are thereby deemed to have been paid (Art. 2 No. 3 RFees).

AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU MC NL PL PT RO SE SI SK TR

10.2 It is currently intended to pay fewer than seven designation fees for the following EPC contracting states designated in the international application: ☐

10.3 It is requested that no communication under Rules 85a(1) or 69(1) need be notified in respect of the contracting states not indicated. If an automatic debit order has been issued, the EPO is authorised, on expiry of the basic period under Article 79(2), to debit seven times the amount of the designation fee. If less than seven states are indicated, the EPO shall debit designation fees only for those states, unless it is instructed to do otherwise before expiry of the basic period. ☑

11. Extension of the European patent

This application is also considered as being a request for extension to all the non-contracting states to the EPC designated in the international application with which "extension agreements" were in force on the date of filing the international application. However, the extension only takes effect if the prescribed extension fee is paid. ☑

It is currently intended to pay the extension fee for the following states:

12. List of enclosed documents

	Description of document	Original file name	Assigned file name
1	Translation of the description as originally filed	57387 texte_20060713144341.pdf	DESCTRAN.pdf
2	Translation of the claims as originally filed	57387 claims _20060713144418.pdf	CLMSTRAN.pdf
3	Translation of abstract as published	57387 abstract_20060713144450.pdf	ABSTTRAN.pdf
4	Translation of any text in the drawings as originally filed	57387 drawings_20060713144522.pdf	DRAWTRAN.pdf

13. Debit from deposit account

☑

Currency: EUR

The European Patent Office is hereby authorised, to debit from the deposit account with the EPO any fees and costs indicated on the fees page.

Deposit account number: 28110235

Account holder: Novagraaf International SA

14. Reimbursements (if any) should be made to the following EPO deposit account:

☑

Number and account holder: Novagraaf International SA, 28110235

15. Fees

		Factor/Reduction applied	Fee schedule	Amount to be paid
15-1	002e Fee for supplementary European search for applications filed before 01.07.2005	0.8	720.00	576.00
15-2	005 Designation fee	7	80.00	560.00
15-3	006e Examination fee (Euro-PCT without supplementary European search report)	1	1 490.00	1 490.00
15-4	020 Basic national fee for an international application	1	95.00	95.00
	Total:		EUR	2 721.00

16. Annotations

16-1. Note (for EPO) (EP Phase)

INVENTOR (; 13.07.2006)

Please note the address of the inventor :

TAKAHASHI Masami, c/o

Matsushita Electric Industrial Co., Ltd., Intellectual Property Rights Operations Company, IP Development Center, 19F Matsushita IMP Bldg., 3-7, Shiromi 1-chome, Chuo-ku, Osaka-shi, Osaka 540-6319 Japan

17. Signature(s) of applicant(s) or representative

Place:	Geneva
Date:	14.July 2006
Signed by:	CH, Novagraaf International SA, R. Balsters 7104
Capacity:	(Representative)

ABSTRACT

A camera installation device has a camera installation base (12) and a camera support section (14). A coupling direction (X) between the camera support section (14) and the camera installation base (12) is inclined relative to the direction vertical to a camera installation surface (16). Further, in the camera installation device, the angle of the camera support section (14) relative to the camera installation base (12) on a coupling reference surface (Y) crossing a coupling direction (X) is variable depending on the angle of the installation surface (16). Preferably, an inclination angle in the coupling direction (X) is 45°, and the camera support section (14) is reversible on the coupling reference surface (Y). Further, the camera support section (14) can be installed on an upper side and a lower side of a camera (18). The camera installation device can be used in different installation places such as a wall surface and a ceiling.

CLAIMS

1. A camera installation device comprising:

a camera installation base having an installation member for a camera installation surface; and

a camera support section coupled to the camera installation base and configured so as to support a camera,

wherein a coupling direction between the camera installation base and the camera support section is inclined relative to a direction vertical to the camera installation surface, and the angle of the camera support section with respect to the camera installation base on a coupling reference surface which intersects with the coupling direction is variable.

2. The camera installation device according to Claim 1, wherein the angle of inclination of the coupling direction is 45 degrees and the camera support section can be inverted on the coupling reference surface.

3. The camera installation device according to Claim 1, wherein the camera support section is configured so that it can be installed on an upper side and a lower side of the camera.

4. The camera installation device according to Claim 1, wherein a camera wiring hole is provided so as to communicate the camera installation base and the camera support section.

DESCRIPTION

CAMERA INSTALLATION DEVICE

Technical Field

[0001] The present invention relates to a camera installation device for installing a monitor camera or the like.

Background Art

[0002] In the related art, a camera installation device for installing a monitor camera on a wall surface, a ceiling, etc. is used. In general, in the related art, different camera installation devices are used depending on the camera installation place. For example, different types of installation devices are used for installing on the wall surface and for installing on the ceiling even though the camera is the same.

[0003] Fig. 7 and Fig. 8 show examples of the camera installation device for the wall surface and for the ceiling. In Fig. 7, a wall surface installation base 100 is installed to a wall surface 102. The wall surface installation base 100 has an L-shape. A horizontal installation surface 104 is provided at a distal end of the wall surface installation base 100. A camera is installed on the installation surface 104.

[0004] On the other hand, in Fig. 8, a ceiling

installation base 110 is installed on a ceiling 112. The ceiling installation base 112 has a rod shape. A horizontal installation surface 114 is provided at a lower end of the ceiling installation base 112. The camera is installed on the installation surface 114.

[0005] As shown in Fig. 7 and Fig. 8, a camera cable 120 is embedded into the wall surface or the ceiling separately from the camera installation bases 100, 110.

[0006] JP-A-5-191689 (pp. 2, Fig. 1) discloses a camera installation device that can be applied to the wall surface and the ceiling. In the same document, the camera installation base and the camera are coupled using a ball joint. The camera can be directed to desired directions by the ball joint. Accordingly, application to the wall surface and the ceiling is enabled.

[0007] In the camera installation device in the related art shown in Fig. 7 and Fig. 8, the wall surface installation base and the ceiling installation base are different from each other. A user has to select the different camera installation base depending on the mounting places. Therefore, the camera installation device in the related art is not convenient. The camera installation device in JP-A-5-191689 can be used both for the wall surface and for the ceiling. However, since it employs the ball joint, fixation is not ensured.

Disclosure of Invention

Problems to be Solved by the Invention

[0008] In view of such a background, it is an object of the present invention to provide a camera installation device that can be used at different installation places.

Means for Solving the Problems

[0009] A camera installation device according to the present invention includes: a camera installation base having an installation member to a camera installation surface; and a camera support section coupled to the camera installation base and configured to support the camera, and a coupling direction between the camera installation base and the camera support section is inclined relative to the direction vertical to the camera installation surface, and the angle of the camera support section with respect to the camera installation base on a coupling reference surface which intersects with the coupling direction is variable.

[0010] As described below, the present invention includes other aspects. Therefore, disclosure of the present invention is intended to provide part of the aspects, and not intended to limit the scope of the invention which is described and claimed here.

Brief Description of the Drawings

[0011] Fig. 1 is a front view of a camera

installation device in a state of being installed on a wall surface according to an embodiment of the present invention.

Fig. 2 is an exploded perspective view of the camera installation device according to the embodiment of the present invention in a state of being installed on the wall surface.

Fig. 3 is a front view of the camera installation device according to the embodiment of the present invention in a state of being installed on a ceiling.

Fig. 4 is an exploded perspective view of the camera installation device according to the embodiment of the present invention in a state of being installed on the ceiling.

Fig. 5A is a drawing showing a structure of the camera installation base side of a coupling member.

Fig. 5B is a drawing showing a structure of the camera support section side of the coupling member.

Fig. 6A is a pattern diagram of the camera installation device in a state of being installed on the wall surface.

Fig. 6B is a pattern diagram of the camera installation device in a state of being installed on the ceiling.

Fig. 7 is a drawing showing a camera installation

device for installing on the wall surface in the related art.

Fig. 8 is a drawing showing a camera installation device for installing on the ceiling in the related art.

Reference Numerals

[0012] 10 camera installation device

12 camera installation base

14 camera support section

16 installation surface

18 camera

20 installation member

22 arm member

30 coupling member

34 insertion portion

38 insertion hole

62 camera installation member

70 camera wiring hole

72 camera cable

Best Mode for Carrying Out the Invention

[0013] Detailed description of the present invention will be given below. However, the detailed description and the attached drawings are not intended to limit the invention. Instead, the scope of the invention is defined by attached claims.

[0014] A camera installation device includes: a camera installation base having an installation member for a camera installation surface; and a camera support section coupled to the camera installation base and configured so as to support a camera, and a coupling direction between the camera installation base and the camera support section is inclined relative to a direction vertical to the camera installation surface, and the angle of the camera support section with respect to the camera installation base on a coupling reference surface which intersects with the coupling direction can be changed or is variable.

[0015] In this arrangement, a posture of the camera can be maintained favorably by varying the angle of the camera support section relative to the camera installation base on the coupling reference surface according to the angle of the camera installation surface. Therefore, the camera installation device can be used on a plurality of installation surfaces having different angles such as the wall surface or the ceiling.

[0016] Preferably, the angle of inclination of the coupling direction is 45 degrees and the camera support section can be inverted or reversed on the coupling reference surface. In this arrangement, the posture of the camera can be maintained in the same posture in either

cases where the camera is installed on two installation surfaces different in angle from each other by 90 degrees. The two installation surfaces different in angle by 90 degrees are typically the wall surface and the ceiling.

[0017] The camera support section may be configured so that it can be installed on an upper side and a lower side of the camera. In this arrangement, the camera may be oriented in the same direction in the vertical direction both in a state of being installed on the wall surface and in a state of being installed on the ceiling.

[0018] Preferably, a camera wiring hole is provided so as to communicate the camera installation base and the camera support section. In this arrangement, since exposure of the camera wiring can be reduced, an appearance image can be improved.

[0019] Referring now to the drawings, the camera installation device according to this embodiment will be described. In this embodiment, a single camera installation device can be used on two types of installation surfaces; that is; the wall surface and the ceiling. Referring to Fig. 1 and Fig. 2 showing a state of being installed on the wall surface, a structure of the camera installation device will be described in the following description. Then, the camera installation device in a state of being installed on the wall surface

will be described. Fig. 1 is a front view of the camera installation device and Fig. 2 is an exploded perspective view.

[0020] As shown in the drawings, a camera installation device 10 generally includes a camera installation base 12 and a camera support section 14. The camera installation base 12 is installed on an installation surface 16 (wall surface), and the camera support section 14 is installed on a camera 18. The camera support section 14 is a component that is coupled to the camera installation base 12, and more specifically, the camera support section 14 is a camera platform. The camera support section may be integrated with the camera 18 within the scope of the present invention. The structure of the respective portions will be described in detail below.

[0021] The camera installation base 12 is formed of aluminum. The camera installation base 12 includes a plate-shaped installation member 20 and an arm member 22 projecting from a substantially center of the installation member 20. The installation member 20 is formed with four installation holes 24 so as to surround the arm member 22. Screws 26 are inserted into the installation holes 24 and are tightened to the installation surface 16. Accordingly, the installation member 20 is installed on the

installation surface 16, and the installation base 12 is fixed to the installation surface 16. The arm member 22 extends from the substantially center of the installation member 20 vertically with respect to the installation surface 16. The arm member 22 extends horizontally in a state of being installed on the wall surface.

[0022] A coupling member 30 is provided at a distal end of the arm member 22. The arm member 22 is coupled to a proximal end of the camera support section 14 by the coupling member 30. In Fig. 1 and Fig. 2, the camera installation base 12 and the camera support section 14 are separately shown. However, in an actual state in use, the camera installation base 12 and the camera support section 14 are coupled by the coupling member 30.

[0023] The coupling member 30 has a fitting structure. That is, a cylindrical insertion portion 34 is projected from an end surface 32 of the arm member 22, and a circular insertion hole 38 is provided on an end surface 36 of the camera support section 14. The insertion portion 34 and the insertion hole 38 are substantially the same in diameter. The insertion portion 34 is inserted into the insertion hole 38. The end surface 36 of the camera support section 14 is aligned with the end surface 32 of the arm member 22. Accordingly, the camera support section 14 and the camera installation base 12 are coupled.

[0024] The insertion portion 34 is inclined relative to the horizontal direction. That is, a coupling direction X of the coupling member 30 is inclined relative to the horizontal direction. The angle of inclination of the coupling direction X is 45 degrees. In the state of being installed on the wall surface, as shown in the drawing, the coupling direction X is directed upward by 45 degrees relative to the horizontal direction

[0025] The camera support section 14 and the camera installation base 12 are fixed at the coupling member 30 by screws 40. The three screws 40 are inserted into holes 42 of the camera support section 14, and are tightened into screw holes 44 of the insertion portion 34. As described later, in this embodiment, the camera support section 14 can be fixed at different angles relative to the camera installation base 12. This function is used for enabling installation on both of the wall surface and the ceiling.

[0026] The camera support section 14 couples the camera installation base 12 and the camera 18. The camera support section 14 includes a base member 50 and a pan rotary member 52 and a tilt rotary member 54. The base member 50 is coupled to the installation base 12 as described above. The pan rotary member 52 is installed to the base member 50 so as to be capable of rotating with

respective thereto. The pan rotary member 52 is rotatable in the panning direction on a panning plane 58. The tilt rotary member 54 is mounted to the pan rotary member 52 so as to be capable of rotating with respect to the pan rotary member 52. The tilt rotary member 54 is rotatable in the tilting direction about the tilting axis 60. As shown in the drawing, a pan surface 58 is horizontal, and the tilting axis 60 is also horizontal. In this arrangement, the camera support section 14 supports the camera 18 so as to be capable of being rotated in the panning direction and in the tilting direction.

[0027] The tilt rotary member 54 of the camera support section 14 is provided with a camera installation member (installation plate) 62. As shown in the drawing, in the state of being installed on the wall surface, the camera installation member 62 is installed on a lower surface of the camera 18. The camera installation member 62 is formed with four mounting holes 64. Four screws 66 are inserted respectively into the four mounting holes 64, and are tightened into the screw holes of the camera 18. Accordingly, the camera support section 14 is installed on the camera 18.

[0028] Interiors of the camera installation base 12 and camera support section 14 are hollows. Both hollows in the interiors of the both members communicate with each

other. Accordingly, a camera wiring hole 70 is defined. A camera cable 72 passes through the camera wiring hole 70. The camera cable 72 includes cables such as a video cable and a power source cable. One end of the camera cable 72 is connected to the camera 18. The camera cable 72 extends from the camera installation base 12 to the inside of the installation surface 16.

[0029] The installation member 20 of the camera installation base 12 is covered by a facing cover 74 formed of resin. The facing cover 74 is fixed to screw holes 78 of the installation member 20 with screws 76.

[0030] Referring to Fig. 1 and Fig. 2 showing the state of being installed on the wall surface, the structure of the camera installation device 10 has been described. Subsequently, referring to Fig. 3 and Fig. 4, a state in which the same camera installation device 10 is installed on the ceiling will be described. Fig. 3 is a front view of the camera installation device in a state of being installed on the wall surface. Fig. 4 is an exploded perspective view of the same.

[0031] As shown in the drawings, in the state of being installed on the ceiling, the installation member 20 of the camera installation base 12 is installed on the ceiling. The arm member 22 extends downward from the ceiling. In the same manner as in the state of being

installed on the wall surface, the camera support section 14 is coupled to the distal end of the arm member 22. However, the angle of installation of the camera support section 14 to the camera installation base 12 is different between the state of being installed on the wall surface and the state of being installed on the ceiling.

[0032] The angle of installation of the camera support section 14 is the circumferential angle centered on a center axis line of the cylindrical shape of the insertion portion 34 of the coupling member 30. Therefore, the angle of installation of the camera support section 14 is an angle on a coupling reference surface Y which intersects with the coupling direction X. The coupling reference surface Y is a plane extending in parallel with a mating surface of the coupling member 30. In this embodiment, the angles of installation are shifted by 180 degrees between the state of being installed on the ceiling and the state of being installed on the wall surface, that is, it is installed in a state in which the camera support section 14 is directed in the opposite direction.

[0033] Fig. 5A and Fig. 5B show configurations of the coupling member 30 for enabling installation in the opposite or inverted direction as described above. Fig. 5A is a cross-sectional view of the insertion portion 34

of the arm member 22 taken along a line A-A in Fig. 1. As shown in the drawing, six screw holes 44a to 44f are provided at regular intervals of 60 degrees circumferentially of the cylindrical surface of the insertion portion 34. Fig. 5B is a cross-sectional view of the camera support section 14 taken along a line B-B in Fig. 1. As shown in the drawing, three holes 42a to 42c are provided at regular intervals of 120 degrees.

[0034] In the state of being installed on the wall surface, three every other screw holes 44a, 44c, 44e are used. The holes 42a, 42b, 42c of the camera support section 14 are aligned with the three screw holes 44a, 44c, 44e respectively. Then, three screws 40 are tightened therein. In contrast, in the state of being installed on the ceiling, the camera support section 14 is rotated by 180 degrees. The screw holes 44d, 44f, 44b are aligned with the holes 42a, 44b, 44c and the three screws 40 are tightened therein. The holes 42a, 42b, 42c are aligned with the screw holes on the opposite sides for the state of being installed on the wall surface and for the state of being installed on the ceiling surface. Accordingly, the angle of installation of the camera support section 14 can be shifted by 180 degrees.

[0035] Referring back to Fig. 3, by having shifted the angle of installation of the camera support section 14,

the camera support section 14 in the state of being installed on the ceiling is inverted from the camera support section 14 in the state of being installed on the wall surface in the vertical direction. Then, the camera installation member (installation plate) 62 of the camera support section 14 is mounted to an upper surface of the camera 18. Accordingly, the posture of the camera 18 is the same in the state of being installed on the ceiling and in the state of being installed on the wall surface.

[0036] Referring now to Fig. 6A and Fig. 6B, a principle of the camera posture being maintained as described above will be described more in detail. Fig. 6A and Fig. 6B show patterns of the camera installation device in the state of being installed on the wall surface and the state of being installed on the ceiling. The camera installation base 12 and the camera support section 14 are shown by thick lines.

[0037] The direction of the camera support section 14 here is considered on a vertical plane passing through the camera installation base 12 and the camera support section 14. When Fig. 6A and Fig. 6B are compared, change from Fig. 6A to Fig. 6B will be made as follows. In Fig. 6B, in association with the change of the angle of installation surface by 90 degrees, the direction of the camera support section 14 is shifted by 90 degrees.

Further, in Fig. 6B, the camera support section 14 is rotated by 180 degrees on a plane intersecting with the coupling direction X, thereby the direction of the camera support section 14 on the vertical plane is shifted by 90 degrees.

[0038] Therefore, by the change of the installation surface and the rotation of the camera support section 14, the direction of the camera support section 14 on the vertical plane is shifted by 180 degrees as shown in the drawings. In other words, the vertical direction of the camera support section 14 is inverted. Accordingly, the same posture of the camera 18 can be maintained in the state of being installed on the wall surface and in the state of being installed on the ceiling. In other words, the function of two types of the camera installation devices in the related art as shown in Fig. 7 and Fig. 8 can be achieved with a single camera installation device 10 in this embodiment.

[0039] As described thus far, according to the camera installation device 10 in this embodiment of the present invention, the coupling direction X between the camera installation base 12 and the camera support section 14 (camera platform) is inclined relative to the direction vertical to the camera installation surface 16. In addition, the camera installation device 10 is configured

so that the angle of the camera support section 14 relative to the camera installation base 12 on the coupling reference surface Y which intersects with the coupling direction X can be varied. In this arrangement, by varying the angle of the camera support section 14 relative to the camera installation base 12 on the coupling reference surface Y according to the change of the angle of the camera installation surface 16, the camera 18 can be maintained in the preferable posture. Therefore, the camera installation device 10 can be used on a plurality of installation surfaces different in angle such as the wall surface and the ceiling.

[0040] In this embodiment, the angle of inclination of the coupling direction X is 45 degrees, and the camera support section 14 can be inverted on the coupling reference surface Y. Accordingly, the camera 18 can be maintained in the same posture irrespective of whether the camera is installed on either one of the two installation surfaces being different in angle from each other by 90 degrees. The two installation surfaces are typically the wall surface and the ceiling described above.

[0041] In this embodiment, the camera support section 14 is configured so as to be capable of being mounted on the upper side and the lower side of the camera 18. In this arrangement, the camera may be oriented in the same

direction in the vertical direction both in a state of being installed on the wall surface and in a state of being installed on the ceiling.

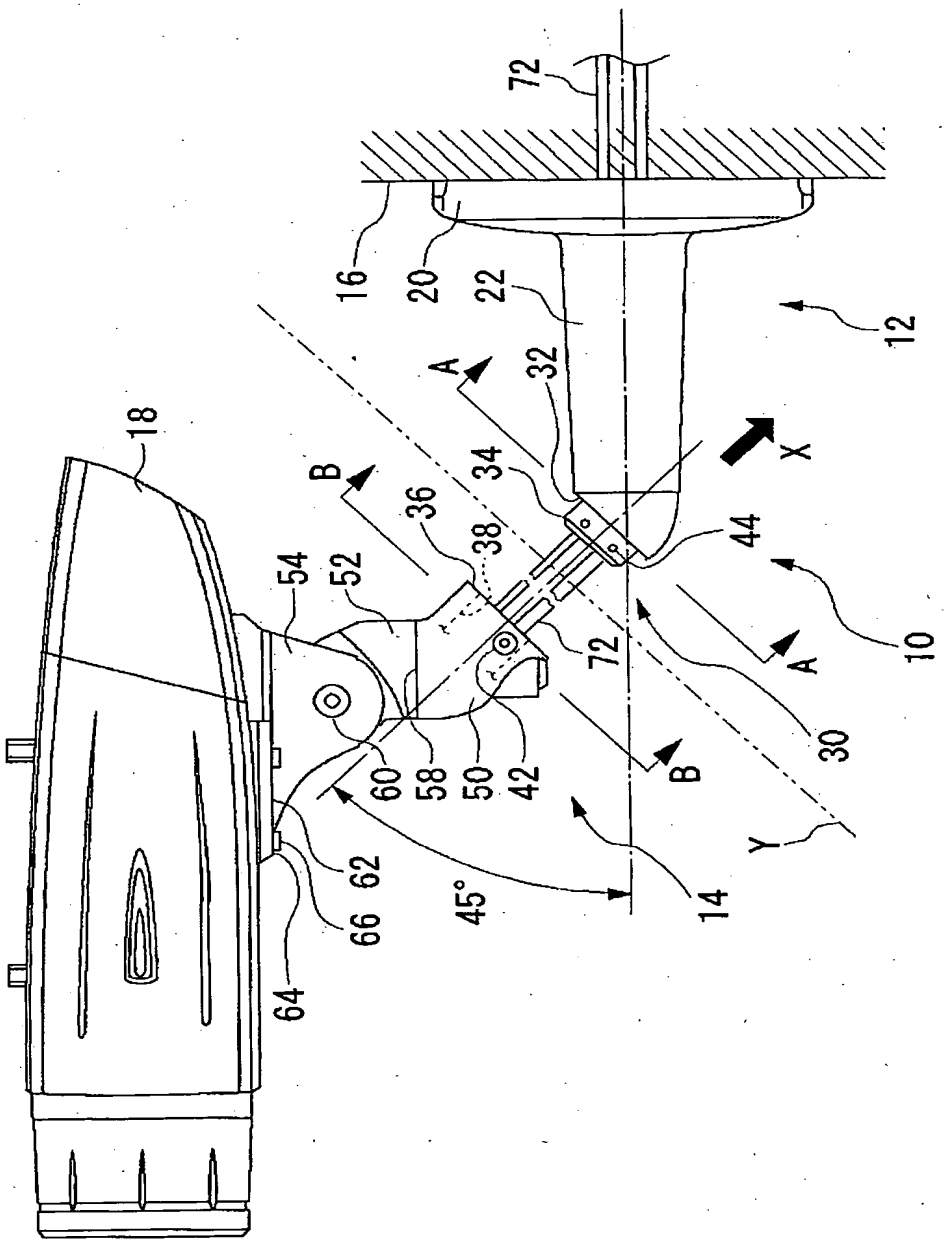
[0042] In this embodiment, the camera wiring hole is provided so as to communicate the camera installation base 12 and the camera support section 14. In this arrangement, exposure of the camera wiring can be reduced, thereby improving the appearance image thereof.

[0043] The preferred embodiments of the present invention which are considered at this moment have been described thus far. However, it is understood that various modifications may be made for the embodiments, and the attached claims are intended to include all these modifications within the real spirit and scope of the present invention.

Industrial Applicability

[0044] The camera installation device of the present invention is effective as the installation device for the monitor camera or the like.

FIG. 1


72
16
20
22
12
A
32
18
B
34
X
36
38
44
54
52
A
10
72
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58
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42
B
Y
62
45°
14
66
64

FIG. 2

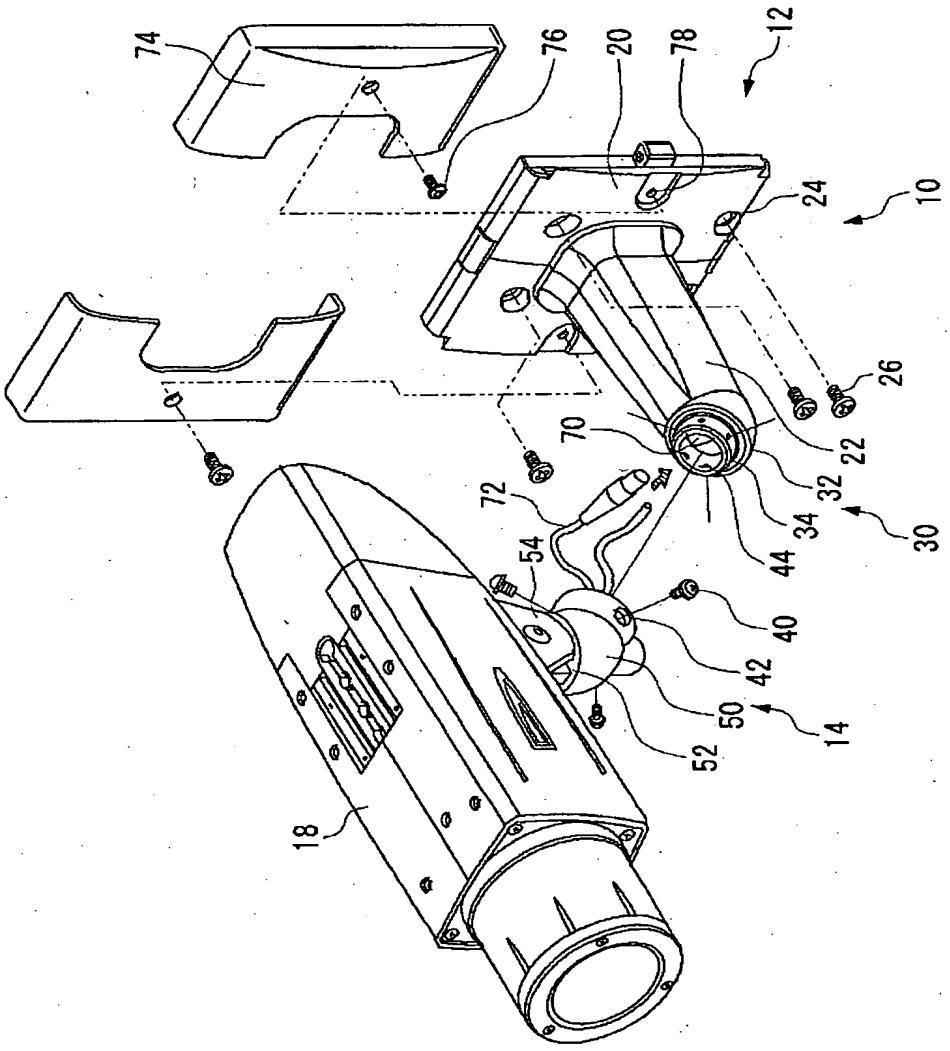

FIG. 3

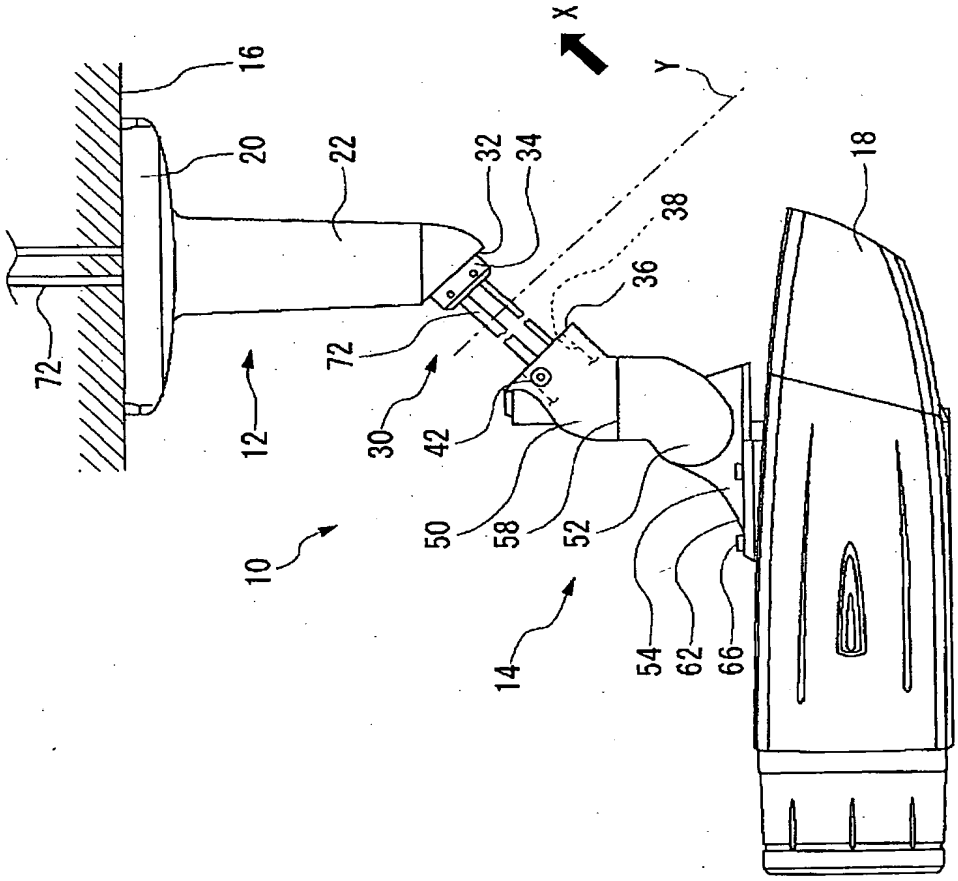

FIG. 4

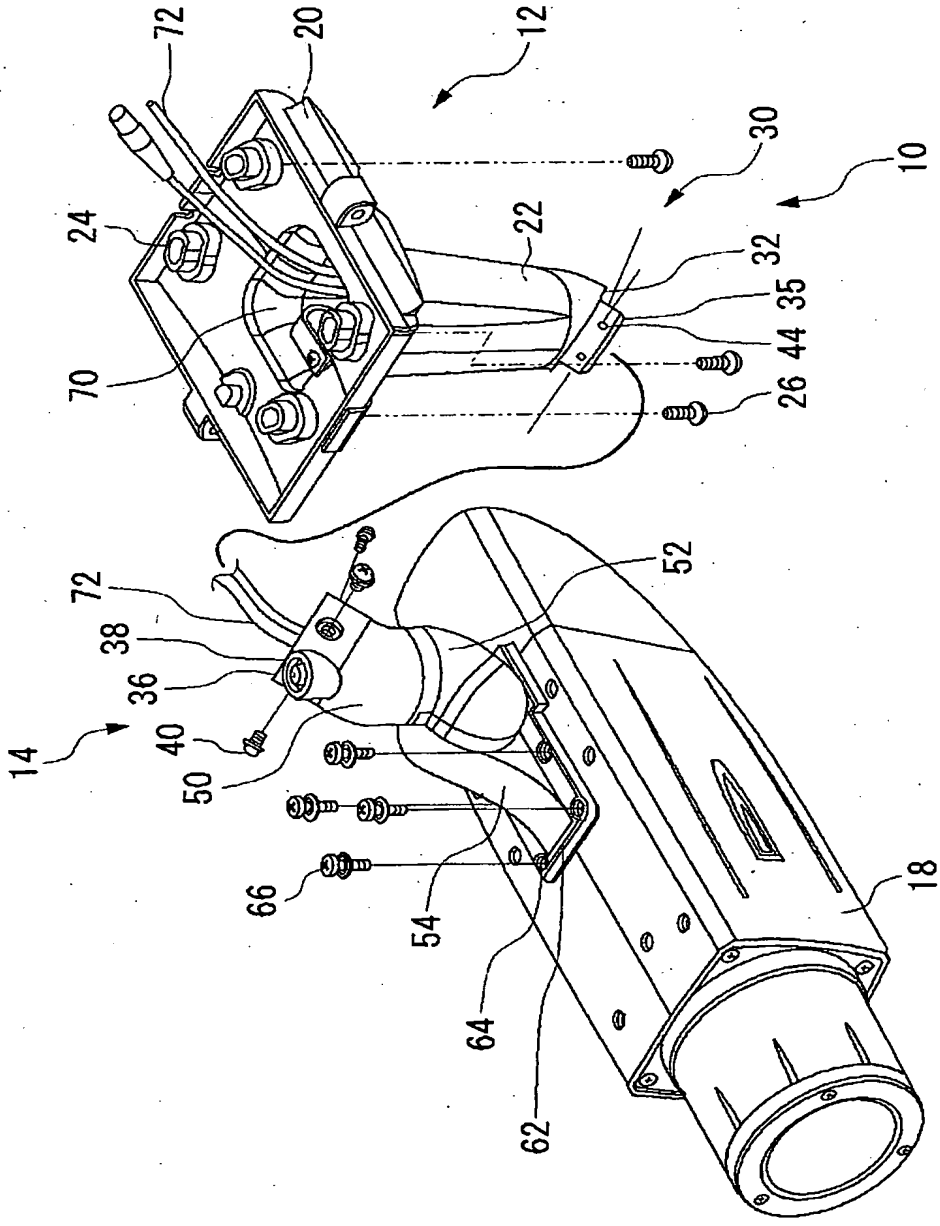

FIG. 5A

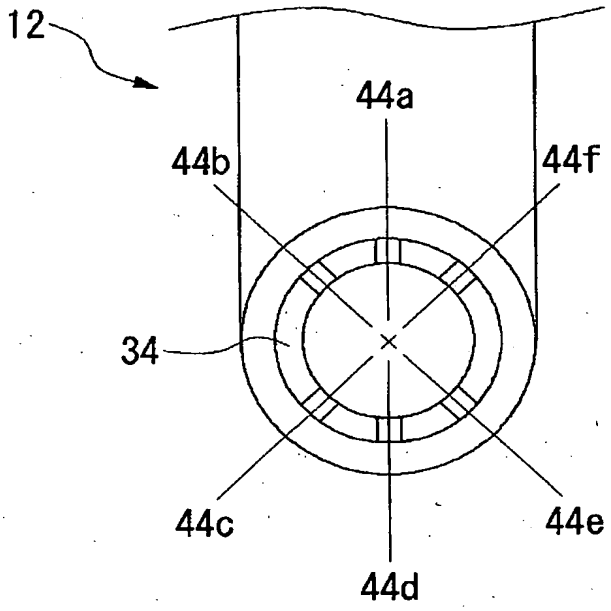

FIG. 5B

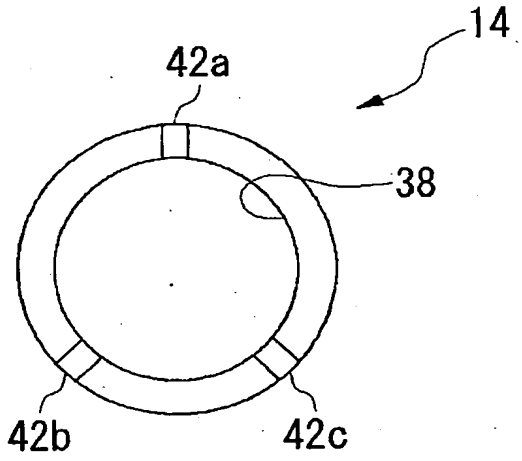

FIG. 6A

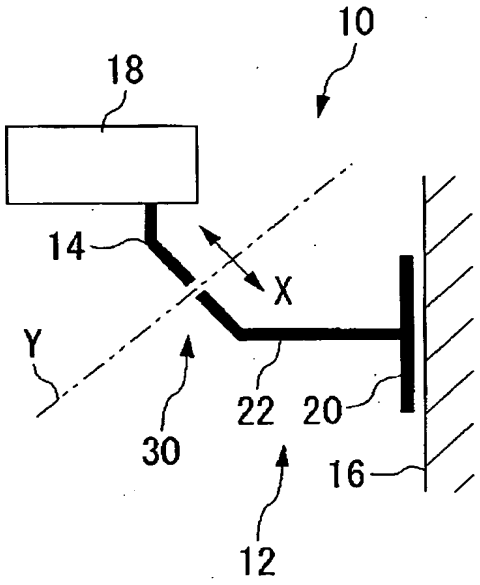

FIG. 6B

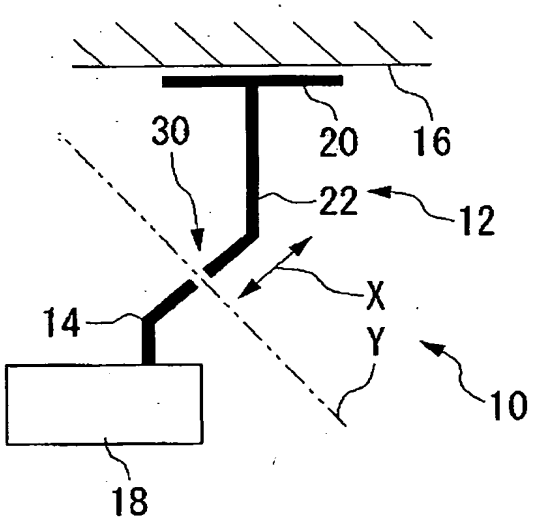

FIG. 7

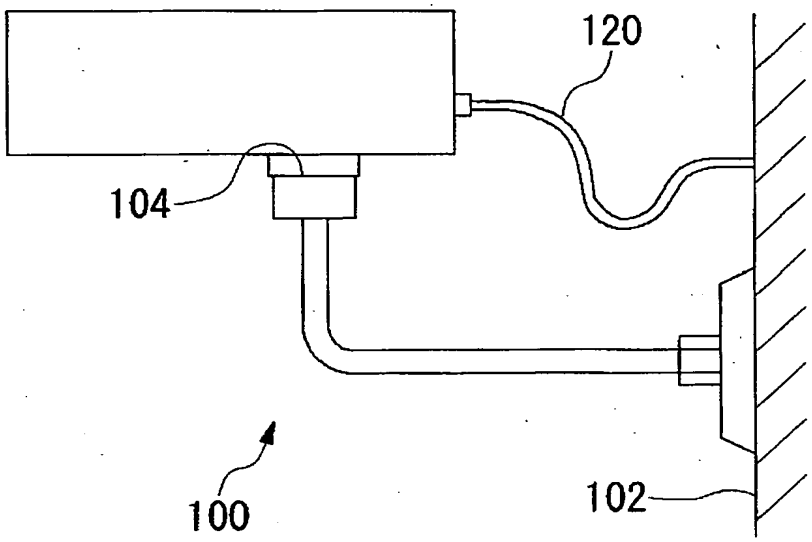

FIG.8